Appl. No. To be assigned; Group Art Unit: To be assigned
[redacted] No. 1488.1220003/EKS/EJH;
Inventors: Li *et al.* ; Tel: 202/371-2600
Title: Human G-Protein Coupled Receptors

```
1   GCACGAGGAACAGAACACTTTCTCATGTCCAGGGTCAGATTACAAGAGCACTCAAGACTT   60

61  TACTGACGAAAACTCAGGAAATCCTCTATCACAAAGAGGTTTGGCAACTAAACTAAGACA  120

121 TTAAAAGGAAAATACCAGATGCCACTCTGCAGGCTGCAATAACTACTACTTACTGGATAC  180

181 ATTCAAACCCTCCAGAATCAACAGTTATCAGGTAACCAACAAGAAATGCAAGCCGTCGAC  240
1                                                   M  Q  A  V  D    5

241 AATCTCACCTCTGCGCCTGGGAACACCAGTCTGTGCACCAGAGACTACAAAATCACCCAG  300
6   N  L  T  S  A  P  G  N  T  S  L  C  T  R  D  Y  K  I  T  Q   25

301 GTCCTCTTCCCACTGCTCTACACTGTCCTGTTTTTTGTTGGACTTATCACAAATGGCCTG  360
26  V  L  F  P  L  L  Y  T  V  L  F  F  V  G  L  I  T  N  G  L   45

361 GCGATGAGGATTTTCTTTCAAATCCGGAGTAAATCAAACTTTATTATTTTTCTTAAGAAC  420
46  A  M  R  I  F  F  Q  I  R  S  K  S  N  F  I  I  F  L  K  N   65

421 ACAGTCATTTCTGATCTTCTCATGATTCTGACTTTTCCATTCAAAATTCTTAGTGATGCC  480
66  T  V  I  S  D  L  L  M  I  L  T  F  P  F  K  I  L  S  D  A   85

481 AAACTGGGAACAGGACCACTGAGAACTTTTGTGTGTCAAGTTACCTCCGTCATATTTTAT  540
86  K  L  G  T  G  P  L  R  T  F  V  C  Q  V  T  S  V  I  F  Y  105

541 TTCACAATGTATATCAGTATTTCATTCCTGGGACTGATAACTATCGATCGCTACCAGAAG  600
106 F  T  M  Y  I  S  I  S  F  L  G  L  I  T  I  D  R  Y  Q  K  125

601 AcCACCAGGCCATTTAAAACATCCAACCCCAAAAATCTCTTGGGGGCTAAGATTCTCTCT  660
126 T  T  R  P  F  K  T  S  N  P  K  N  L  L  G  A  K  I  L  S  145

661 GTTGTCATCTGGGCATTCATGTTCTTACTCTCTTtGCCTAACATGATTCTGACCAACAGg  720
146 V  V  I  W  A  F  M  F  L  L  S  L  P  N  M  I  L  T  N  R  165

721 CAGCCGAGAGACAAGAATGTGaAGAAaTGCTCTTTCCTTAAATCAGAGTTCGGTCTAGTC  780
166 Q  P  R  D  K  N  V  K  K  C  S  F  L  K  S  E  F  G  L  V  185

781 TGGCATGAAATAGTAAATTACATCTGTCAAGTCATTTTCTGGATTAATTTCTTAATTGTT  840
186 W  H  E  I  V  N  Y  I  C  Q  V  I  F  W  I  N  F  L  I  V  205
```

FIG.1A

Appl. No. To be assigned; Group Art Unit: To be assigned
Dkt. No. 1488.1220003/EKS/EJH;
Inventors: Li *et al.* ; Tel: 202/371-2600
Title: Human G-Protein Coupled Receptors

```
841  ATTGTATGTTATACACTCATTACAAAAGAACTGTACCGGTCATACGTAAGAACGAGGGGT  900
206  I  V  C  Y  T  L  I  T  K  E  L  Y  R  S  Y  V  R  T  R  G   225

901  GTAGGTAAAGTCCCCAGGAAAAAGGTGAACGTCAAAGTTTTCATTATCATTGCTGTATTC  960
226  V  G  K  V  P  R  K  K  V  N  V  K  V  F  I  I  I  A  V  F   245

961  TTTATTTGTTTTGTTCCTTTCCATTTTGCCCGAATTCCTTACACCCTGAGCCAAACCCGG  1020
246  F  I  C  F  V  P  F  H  F  A  R  I  P  Y  T  L  S  Q  T  R   265

1021 GATGTCTTTGACTGCACtGcTGAAAATACTCTGTTCTATGTGAAAGAGAGCACTCTGTGG  1080
266  D  V  F  D  C  T  A  E  N  T  L  F  Y  V  K  E  S  T  L  W   285

1081 TTAACTTCCTTAAATGCATGCCTGGATCCGTTCATCTATTTTTTCCTTTGCAAGTCCTTC  1140
286  L  T  S  L  N  A  C  L  D  P  F  I  Y  F  F  L  C  K  S  F   305

1141 AGAAATTCCTTGATAAGTATGCTGAAGTGCCCCAATTCTGCAACATCTCTGTCCCAGGAC  1200
306  R  N  S  L  I  S  M  L  K  C  P  N  S  A  T  S  L  S  Q  D   325

1201 AATAGGAAAAAAGAACAGGATGGTGGTGAcCCAAATGAAGAGACTCCAATGTAAACAAAT  1260
326  N  R  K  K  E  Q  D  G  G  D  P  N  E  E  T  P  M  *          343

1261 TAACTAAGGAAATATTTCAATCTCTTTGTGTTCAGAACTCGTTAAAGCAAAGCGCTAAGT  1320

1321 AAAAATATTAACTGACGAAGAAGCAACTAAGTTAATAATAATGACTCTAAAGAAACAGAA  1380

1381 GATTACAAAAGCAATTTTCATTTACCTTTCCAGTATGAAAAGCTATCTTAAAATATAGAA  1440

1441 AACTAATCTAAACTGTAGCTGTATTAGCAGCAAAACAAACGACATCCAATTGTCATGCTG  1500

1501 CATGCAAAACTACACAGAATTCATGTTTTGgCAGAGTTTTGGCAAAATGAGTAATCATAT  1560

1561 AATATTTACTGTAATTTTTAAAATACATTATCGTTCACAATTTTATTTTTTCATAATCAA  1620

1621 CTAAGGAAGAACGATCAATTGGATATAATCTTCTTACCAAAAATGATAGTTAAAATGTAT  1680

1681 ATATATCCTAGTCCCCTAACCaAATCCTGACCTATTGGGATACTTATAAAAATTTAAGTA  1740

1741 AGTGGGATACACAAAGAATAATAACTATTAACTTTTCATTATTAGCcAAAAACCTAAGGG  1800
```

FIG.1B

Appl. No. To be assigned; Group Art Unit: To be assigned
Atty. Dkt. No. 1488.1220003/EKS/EJH;
Inventors: Li *et al.*; Tel: 202/371-2600
Title: Human G-Protein Coupled Receptors

1801 ATTTAAACTAATTGAAaCTGTATTTGATTGGACTTAATTTTTTATGTTTATTTAGAAGAT 1860

1861 AAAGATTTAAGAAGACCTTTACAATAAAGAGAAGAAATATCGAAGTCATTAAAATAAGGA 1920

1921 GACTTACTTTTATGACATTCTAATACTAAAAAATATAGAAATATTTCCTTAATTCTAGAG 1980

1981 AAACTAGTTTTACTAATTTTTTACAACTTCAATAATACCATCACTGACACTTACCTTTAT 2040

2041 TAATTAGCTTCTAGAAAATAGCTGCTAATTAGGTTAATGAACATTTTACCTTAGTGAAAA 2100

2101 AAAaTTAATTAAATATGATTACAAAGTTGCACAGCATAACTACTGAGAGGAAAGTGATTG 2160

2161 ATCTGTTTGTAATTACTTGTTTGTATTGGTGTGTATAAAATACAAATTTACATTAAACTC 2220

2221 TAAAtcattaaaAAAAAAAAAAAAAAA 2247

FIG.1C

[redacted]pl. No. To be assigned; Group Art Unit: To be assigned
[redacted]. No. 1488.1220003/EKS/EJH;
[redacted]ventors: Li *et al.* ; Tel: 202/371-2600
itle: Human G-Protein Coupled Receptors

```
 1 MQAVDNLTSAP....GNTSLCTRDYKITQVLFPLLYTVLFFVGLITNGLA  46
   :| .:|:|.:.    ||.:    .....:::|| |.::|::||:.| ||
 3 IQMANNFTPPSATPQGNDCDLYAHHSTARIVMPLHYSLVFIIGLVGNLLA  52

47 MRIFFQIRSKSN.FIIFLKNTVISDLLMILTFPFKILSDAKLGTGPLRTF  95
   : ::.| |.| |  .:: .| ||||:|:. .:| :|   |.  . .: .
53 LVVIVQNRKKINSTTLYSTNLVISDILFTTALPTRIAYYAMGFDWRIGDA  102

96 VCQVTSVIFYFTMYISISFLGLITIDRYQKTTRPFKTSNPKNLLGAKILS  145
   :|.:|.::||:. | ::.|:. :.|||:  ..:|:: .. |.:  || ::
103 LCRITALVFYINTYAGVNFMTCLSIDRFIAVVHPLRYNKIKRIEHAKGVC  152

146 VVIWAFMFLLSLPNMI..LTNRQPRDKNVKKCSFLKSEFGLVWHEIVNYI  193
    :.:| ::|  .|| :|  :...::  ....:. :... :|.|  :..::
153 IFVWILVFAQTLPLLINPMSKQEAERITCMEYPNFEETKSLPWILLGACF  202

194 CQVIFWINFLIVIVCYTLITKELYRSYVRTRGVGK..VPRKKVNVKVFII  241
    .. ::   ::|:::||. |. .|:|.  ... .:|  | :| :|. ::||
203 IGYVL..PLIIILICYSQICCKLFRTAKQNPLTEKSGVNKKALNTIILII  250

242 IAVFFICFVPFHFARIPYTLSQTR..DVFDCTAENTLFYVKESTLWLTSL  289
    : ||.:||.|:|.| |.. :.. |  :.::|.. :.: .  . |: | .:
251 V.VFVLCFTPYHVAIIQHMIKKLRFSNFLECSQRHSFQISLHFTVCLMNF  299

290 NACLDPFIYFFLCKSFRNSLISMLKCPNSATSLSQDNRKKEQDGGDPNEE  339
    |.|:|||||||| ||:::..::.||| . | .|:| . :. .::.: . .|
300 NCCMDPFIYFFACKGYKRKVMRMLKRQVS.VSISSAVKSAPEENSREMTE  348

340 TPM 342
    |.|
349 TQM 351
```

FIG.2

Appl. No. To be assigned; Group Art Unit: To be assigned
Dkt. No. 1488.122003/JDK/S/EJH;
Inventors: Li *et al.*; Tel: 202/371-2600
Title: Human G-Protein Coupled Receptors

```
1   GGCACGAGCCCACCCTGCGTCGGGCCTCAGTCAGCCCCCGGGGGAGGCCATGAACGCCAC  60
1                                                   M  N  A  T   4

61  GGGGACCCCGGTGGCCCCCGAGTCCTGCCAACAGCTGGCGGCCGGCGGGCACAGCCGGCT  120
5   G  T  P  V  A  P  E  S  C  Q  Q  L  A  A  G  G  H  S  R  L   24

121 CATTGTTCTGCACTACAACCACTCGGGCCGGCTGGCCGGGCGCGGGGGGCCGGAGGATGG  180
25  I  V  L  H  Y  N  H  S  G  R  L  A  G  R  G  G  P  E  D  G   44

181 CGGCCTGGGGGCCCTGCGGGGGCTGTCGGTGGCCGCCAGCTGCCTGGTGGTGCTGGAGAA  240
45  G  L  G  A  L  R  G  L  S  V  A  A  S  C  L  V  V  L  E  N   64

241 CTTGCTGGTGCTGGCGGCCATCACCAGCCACATGCGGTCGCAACGCTGGGTCTACTATTG  300
65  L  L  V  L  A  A  I  T  S  H  M  R  S  Q  R  W  V  Y  Y  C   84

301 CCTGGTGAACATTACGATGAGTGACCTGCTCACGGGCGCGGCCTACCTGGCCAACGTGCT  360
85  L  V  N  I  T  M  S  D  L  L  T  G  A  A  Y  L  A  N  V  L  104

361 GCTGTCGGGGGCCCGCACCTTCCGTCTGGCGCCCGCCCAGTGGTTCCTACGGAAGGGCCT  420
105 L  S  G  A  R  T  F  R  L  A  P  A  Q  W  F  L  R  K  G  L  124

421 GCTCTTCACCGCCCTGGCCGCCTCCACCTTCAGCCTGCTCTTCACTGCAGGGTTGCGCTT  480
125 L  F  T  A  L  A  A  S  T  F  S  L  L  F  T  A  G  L  R  F  144

481 TGCCACCATGGTGCGGCCGGTGGCCGAGAGCGGGGCCACCAAGACCAGCCGCGTCTACGG  540
145 A  T  M  V  R  P  V  A  E  S  G  A  T  K  T  S  R  V  Y  G  164

541 CTTCATCGGCCTCTGCTGGCTGCTGGCCGCGCTGCTGGGGATGCTGCCTTTGCTGGGCTG  600
165 F  I  G  L  C  W  L  L  A  A  L  L  G  M  L  P  L  L  G  W  184

601 GAACTGCCTGTGCGCCTTTGACCGCTGCTCCAGCCTTCTGCCCCTCTACTCCAAGCGCTA  660
185 N  C  L  C  A  F  D  R  C  S  S  L  L  P  L  Y  S  K  R  Y  204

661 CATCCTCTTCTGCCTGGTGATCTTCGCCGGCGTCCTGGCCACCATCATGGGCCTCTATGG  720
205 I  L  F  C  L  V  I  F  A  G  V  L  A  T  I  M  G  L  Y  G  224

721 GGCCATCTTCCGCCTGGTGCAGGCCAGCGGGCAGAAGGCCCCACGCCCAGCGGCCCGCCG  780
225 A  I  F  R  L  V  Q  A  S  G  Q  K  A  P  R  P  A  A  R  R  244
```

FIG.3A

Appl. No. To be assigned; Group Art Unit: To be assigned
Dkt. No. 1488.1220003/EKS/EJH;\
Inventors: Li *et al.* ; Tel: 202/371-2600
Title: Human G-Protein Coupled Receptors

```
781  CAAGGCCCGCCGCCTGCTGAAGACGGTGCTGATGATCCTGCTGGCCTTCTTGGTGTGCTG  840
245   K  A  R  R  L  L  K  T  V  L  M  I  L  L  A  F  L  V  C  W  264

841  GGGACCACTCTTCGGGCTGCTGCTGGCCGACGTCTTTGGCTCCAACCTCTGGGCCCAGGA  900
265   G  P  L  F  G  L  L  L  A  D  V  F  G  S  N  L  W  A  Q  E  284

901  GTACCTGCGGGGCATGGACTGGATCCTGGCCCTGGCCGTCCTCAACTCGGCGGTCAACCC  960
285   Y  L  R  G  M  D  W  I  L  A  L  A  V  L  N  S  A  V  N  P  304

961  CATCATCTACTCCTTCCGCAGCAGGGAGGTGTGCAGAGCCGTGCTCAGCTTCCTCTGCTG 1020
305   I  I  Y  S  F  R  S  R  E  V  C  R  A  V  L  S  F  L  C  C  324

1021 CGGGTGTCTCCGGCTGGGCATGCGAGGGCCCGGGGACTGCCTGGCCCGGGCCGTCGAGGC 1080
325   G  C  L  R  L  G  M  R  G  P  G  D  C  L  A  R  A  V  E  A  344

1081 TCACTCCGGAGCTTCCACCACCGACAGCTCTCTGAGGCCAAGGGACAGCTTTCGCGGCTC 1140
345   H  S  G  A  S  T  T  D  S  S  L  R  P  R  D  S  F  R  G  S  364

1141 CCGCTCGCTCAGCTTTCGGATGCGGGAGCCCCTGTCCAGCATCTCCAGCGTGCGGAGCAT 1200
365   R  S  L  S  F  R  M  R  E  P  L  S  S  I  S  S  V  R  S  I  384

1201 CTGAAGTTGCAGTCTTGCGTGTGGATGGTGCAACCACCGGGTGCGTGCCAGGCAGGCCCT 1260
385   *                                                            385

1261 CCTGGGGTACAGGAAGCTGTGTGCACGCAACCTCGCCCTGTATGGGGAGCAGGGAACGGG 1320

1321 ACAGGCCCCCATGGACTTGCCCGGTGGCCTCTCGGGGCTTCTGACGCCATATGGACTTGC 1380

1381 CCATTGCCTATGGCTCACCCTGGACAAGGAGGCAACCACCCCACCTCCCCGTAGGAGCAG 1440

1441 AGAGCACCCTGGTGTGGGGGCGAGTGGGTTCCCCACAACCCCGCTTCTGTGTGATTCTGG 1500

1501 GGAAGTCCCGGCCCCTCTCTGGGCCTCAGTAGGGCTCCCAGGCTGCAAGGGGTGGACTGT 1560

1561 GGGATGCATGCCCTGGCAACATTGAAGTTCGATCATGGTAAAAAAAAAAAAAAAAAAAAA 1620

1621 AAAAAAAAAAAAAAAA 1637
```

FIG.3B

ppl. No. To be assigned; Group Art Unit: To be assigned
kt. No. 1488.1220003/EKS/EJH;
ventors: *Li et al.*; Tel: 202/371-2600
itle: Human G-Protein Coupled Receptors

```
1   MNATGTPVAPESCQQLAAGGHSRLIVLHYNHSGRLAGRGGPEDGGLGALR  50
    |.:|:.|:...    :.. .:  :|| |||..|:|. .::.|: ::   .
1   MGPTSVPLVKAHRSSVSDYVNYDIIVRHYNYTGKLNISADKEN.SIKLTS  49

51  GLSVAASCLVVLENLLVLAAITSHMRSQRWVYYCLVNITMSDLLTGAAYL  100
    .: :  :|:::|||::|| .| . .: :| :|| :.|:.:||||.|.||
50  VVFILICCFIILENIFVLLTIWKTKKFHRPMYYFIGNLALSDLLAGVAYT  99

101 ANVLLSGARTFRLAPAQWFLRKGLLFTALAASTFSLLFTAGLRFATMVRP  150
    ||:|||| |::|.|||||||.| :|.||.||.|||| .|  |: ||::
100 ANLLLSGATTYKLTPAQWFLREGSMFVALSASVFSLLAIAIERYITMLKM  149

151 VAESGATKTSRVYGFIGLCWLLAALLGMLPLLGWNCLCAFDRCSSLLPLY  200
      ..|. .. |:: :|: ||::. :|| ||::||||::|:..||.:||||
150 KLHNGS.NNFRLFLLISACWVISLILGGLPIMGWNCISALSSCSTVLPLY  198

201 SKRYILFCLVIFAGVLATIMGLYGAIFRLVQASGQKAPRPAARRKARR..  248
     |:|||| .:|. :| .|: ||. |:.||...:.: . . . .||.|
199 HKHYILFCTTVFTLLLLSIVILYCRIYSLVRTRSRRLTFRKNISKASRSS  248

249 ....LLKTVLMILLAFLVCWGPLFGLLLADVFGSNLWAQEYLRGMDWILA  294
        |||||:::| .|:.||:||| ||| || |:.:.. :.|   :::|.
249 ENVALLKTVIIVLSVFIACWAPLFILLLLDV.GCKVKTCDILFRAEYFLV  297

295 LAVLNSAVNPIIYSFRSREVCRAVLSFLCCGCLRLGMRGPGDCLARAVEA  344
    ||||||:.|||||.:  .:|: ||.:.:::|.  . |  :.:: : |:: |
298 LAVLNSGTNPIIYTLTNKEMRRAFIRIMSCCKCPSG..DSAGKFKRPIIA  345

345 ...HSGASTTDSSLRPRDSFRGSRSLSFRMREPLSSIS  379
        | ....:|| ..:|.  |... .:. .: :.| |
346 GMEFSRSKSDNSSHPQKDE..GDNPETIMSSGNVNSSS  381
```

FIG.4